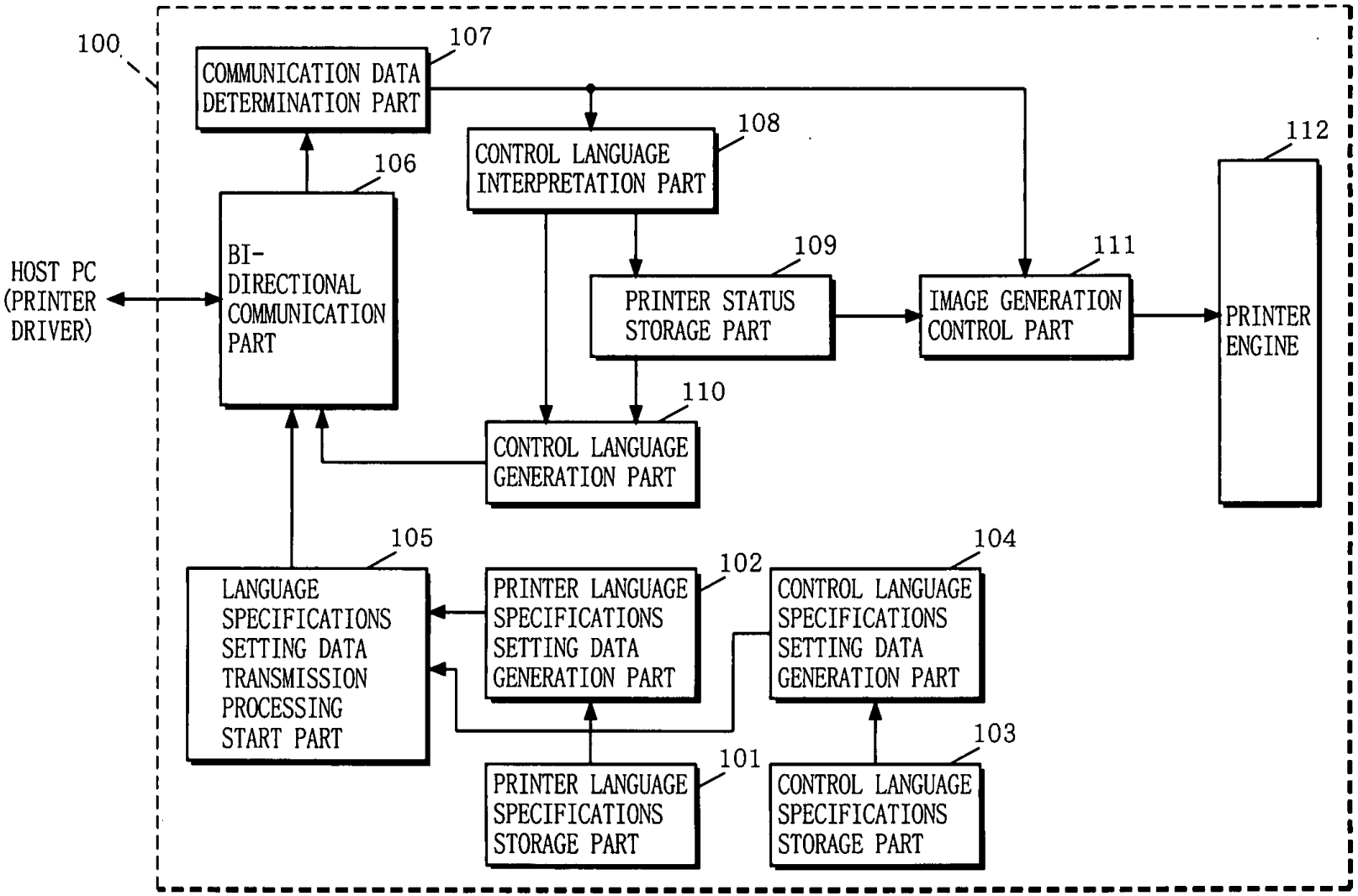
FIG. 1

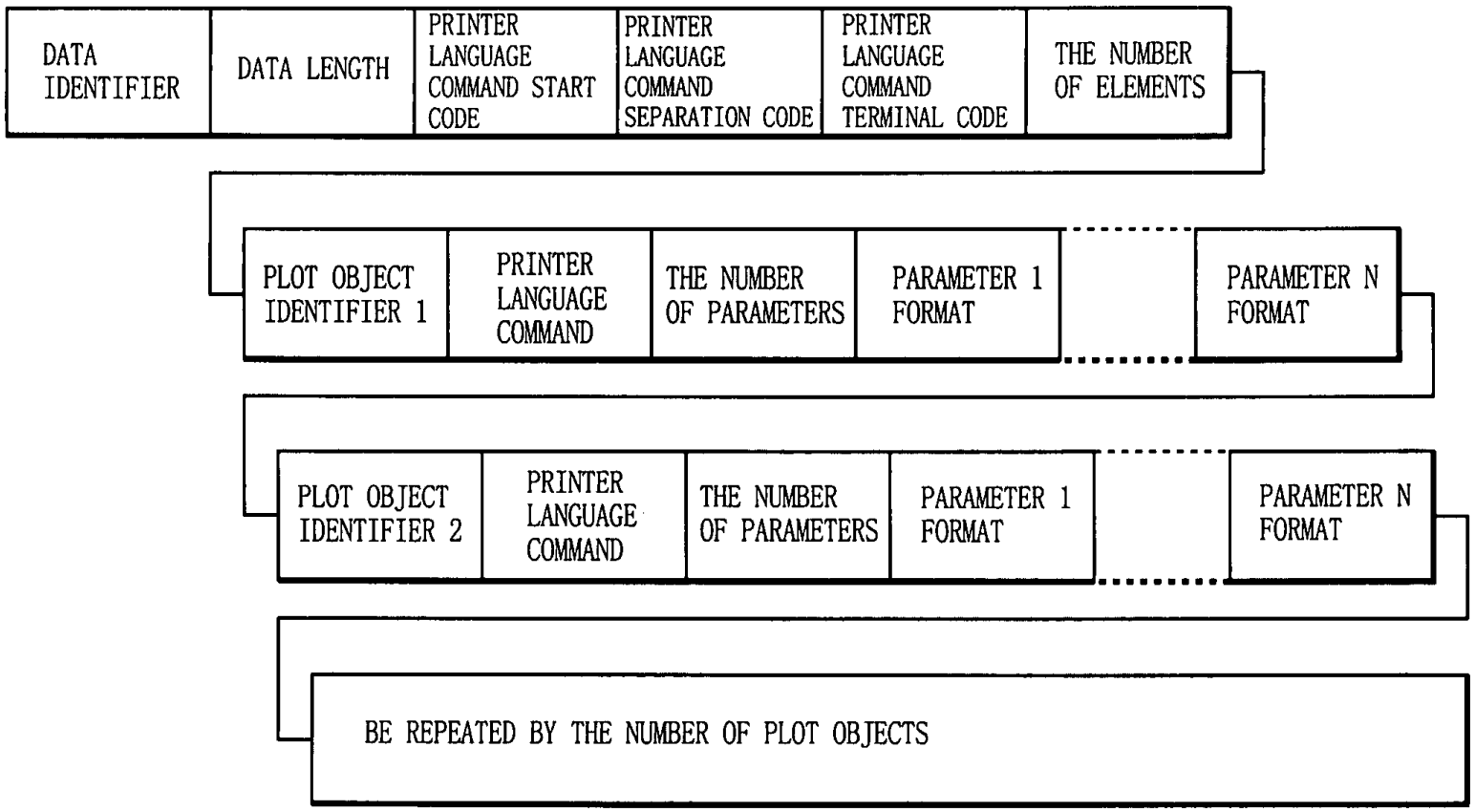

100
COMMUNICATION DATA DETERMINATION PART
107
CONTROL LANGUAGE INTERPRETATION PART
108
112
106
BI-DIRECTIONAL COMMUNICATION PART
HOST PC (PRINTER DRIVER)
109
PRINTER STATUS STORAGE PART
111
IMAGE GENERATION CONTROL PART
PRINTER ENGINE
110
CONTROL LANGUAGE GENERATION PART
105
LANGUAGE SPECIFICATIONS SETTING DATA TRANSMISSION PROCESSING START PART
PRINTER LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
102
104
CONTROL LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
103
101
PRINTER LANGUAGE SPECIFICATIONS STORAGE PART
CONTROL LANGUAGE SPECIFICATIONS STORAGE PART

POSTED: 2/1/2000

FIG. 2

PLOT OBJECT	COMMAND
CIRCLE	CIRCLE, CENTER X COORDINATE, CENTER Y COORDINATE, RADIUS ;
RECTANGLE	RECTANGLE, UPPER-LEFT X COORDINATE, UPPER-LEFT Y COORDINATE, LOWER-RIGHT X COORDINATE, LOWER-RIGHT Y COORDINATE ;
LINE	LINE, STARTPOINT X COORDINATE, STARTPOINT Y COORDINATE, ENDPOINT X COORDINATE, ENDPOINT Y COORDINATE ;
ELLIPSE	ELLIPSE, STARTPOINT X COORDINATE, STARTPOINT Y COORDINATE, ENDPOINT X COORDINATE, ENDPOINT Y COORDINATE ;
⋮	⋮

FIG. 3


DATA IDENTIFIER
DATA LENGTH
PRINTER LANGUAGE COMMAND START CODE
PRINTER LANGUAGE COMMAND SEPARATION CODE
PRINTER LANGUAGE COMMAND TERMINAL CODE
THE NUMBER OF ELEMENTS
PLOT OBJECT IDENTIFIER 1
PRINTER LANGUAGE COMMAND
THE NUMBER OF PARAMETERS
PARAMETER 1 FORMAT
PARAMETER N FORMAT
PLOT OBJECT IDENTIFIER 2
PRINTER LANGUAGE COMMAND
THE NUMBER OF PARAMETERS
PARAMETER 1 FORMAT
PARAMETER N FORMAT
BE REPEATED BY THE NUMBER OF PLOT OBJECTS

Posted: 2/13/2004

FIG. 4

CONTROL ELEMENT	COMMAND
INPUT TRAY	INPUTTRAY, TRAY NUMBER ;
INTERNALLY-PROVIDED MEMORY CAPACITY	MEMORY ;
PAPER SELECTION	PAPER, PAPER SIZE ;
⋮	⋮

FIG. 5

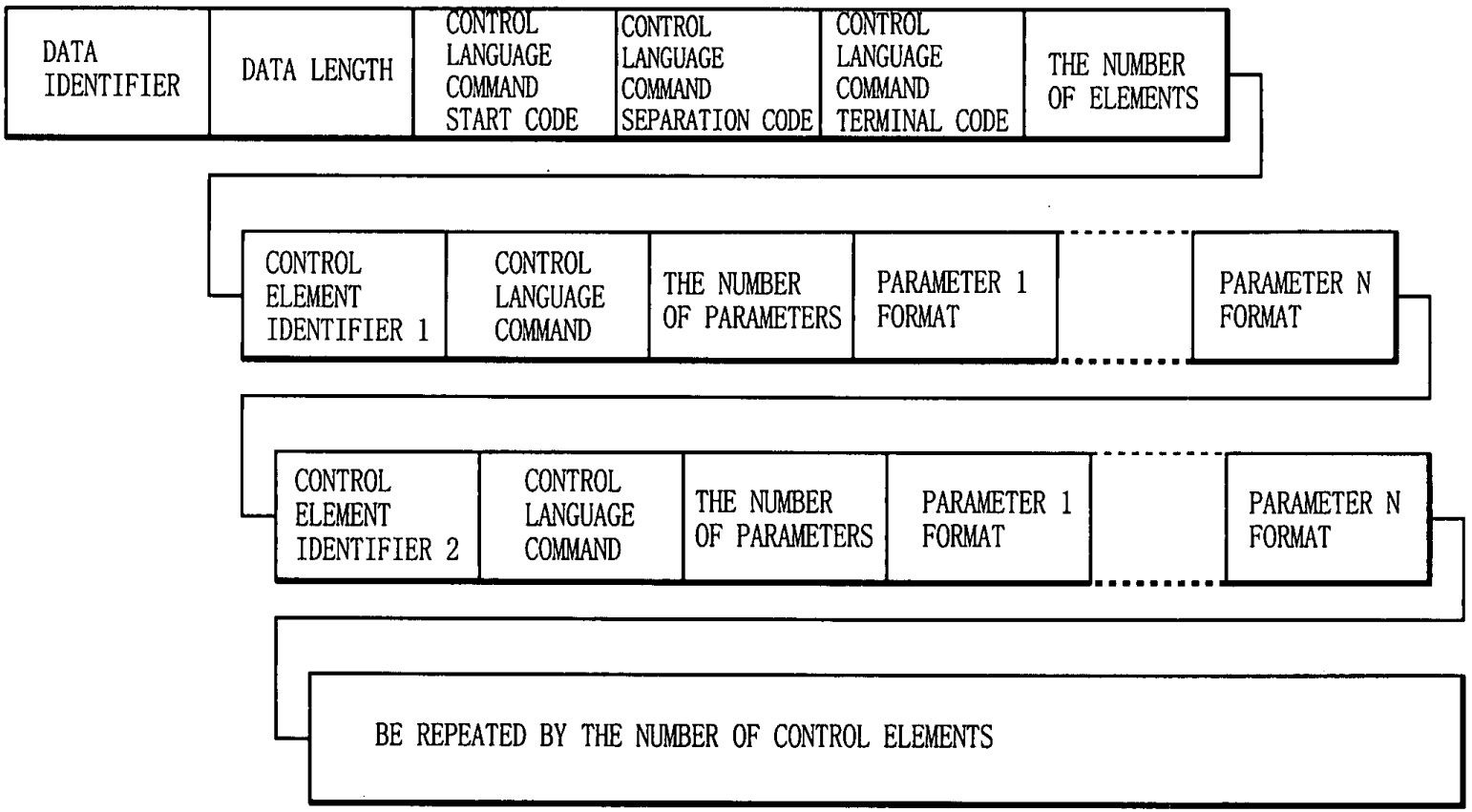

DATA IDENTIFIER
DATA LENGTH
CONTROL LANGUAGE COMMAND START CODE
CONTROL LANGUAGE COMMAND SEPARATION CODE
CONTROL LANGUAGE COMMAND TERMINAL CODE
THE NUMBER OF ELEMENTS
CONTROL ELEMENT IDENTIFIER 1
CONTROL LANGUAGE COMMAND
THE NUMBER OF PARAMETERS
PARAMETER 1 FORMAT
PARAMETER N FORMAT
CONTROL ELEMENT IDENTIFIER 2
CONTROL LANGUAGE COMMAND
THE NUMBER OF PARAMETERS
PARAMETER 1 FORMAT
PARAMETER N FORMAT
BE REPEATED BY THE NUMBER OF CONTROL ELEMENTS

FIG. 6

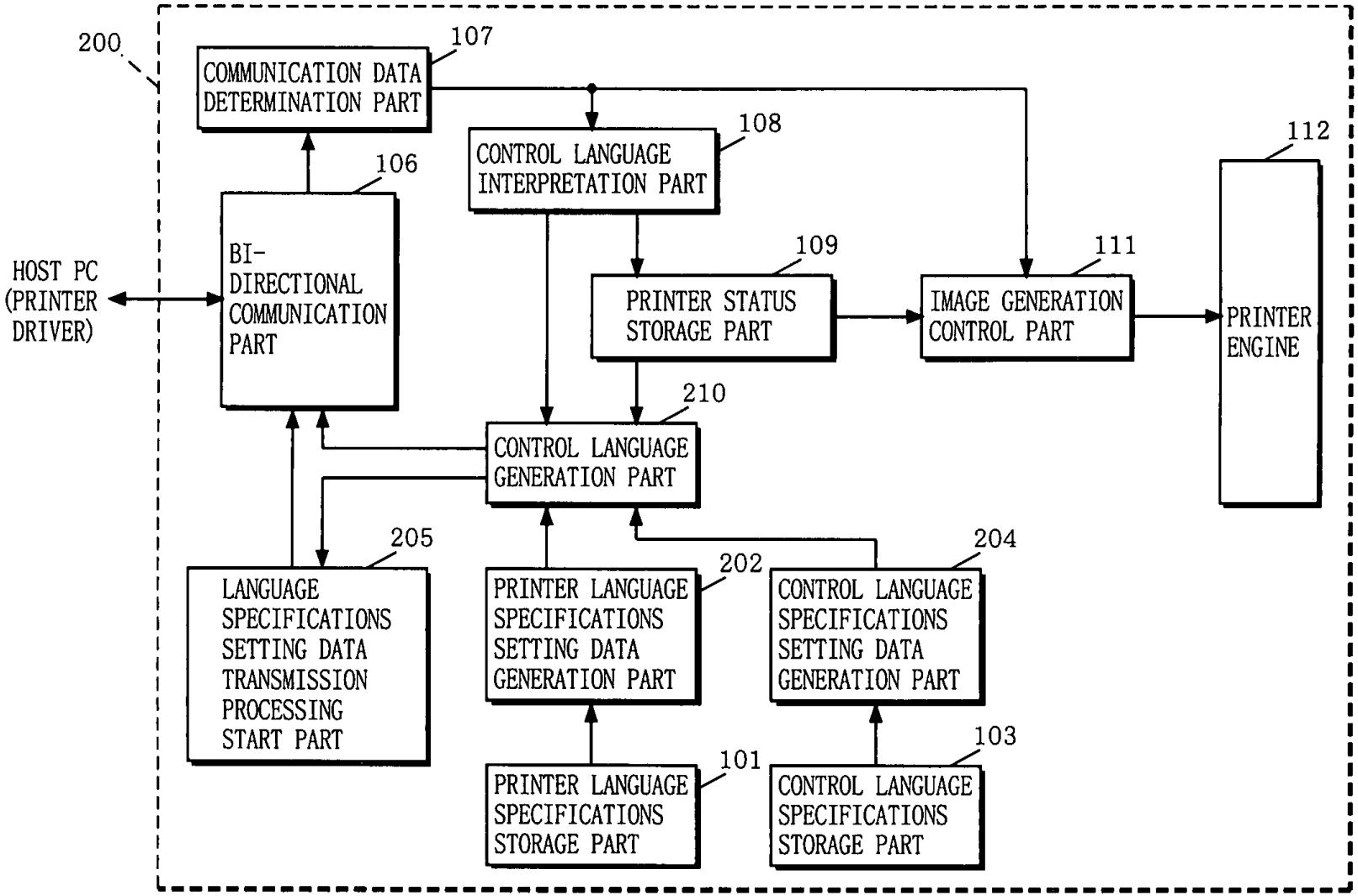

200
COMMUNICATION DATA DETERMINATION PART
107
CONTROL LANGUAGE INTERPRETATION PART
108
112
106
BI-DIRECTIONAL COMMUNICATION PART
HOST PC (PRINTER DRIVER)
109
111
PRINTER STATUS STORAGE PART
IMAGE GENERATION CONTROL PART
PRINTER ENGINE
210
CONTROL LANGUAGE GENERATION PART
205
204
202
LANGUAGE SPECIFICATIONS SETTING DATA TRANSMISSION PROCESSING START PART
PRINTER LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
CONTROL LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
103
101
PRINTER LANGUAGE SPECIFICATIONS STORAGE PART
CONTROL LANGUAGE SPECIFICATIONS STORAGE PART

FIG. 7

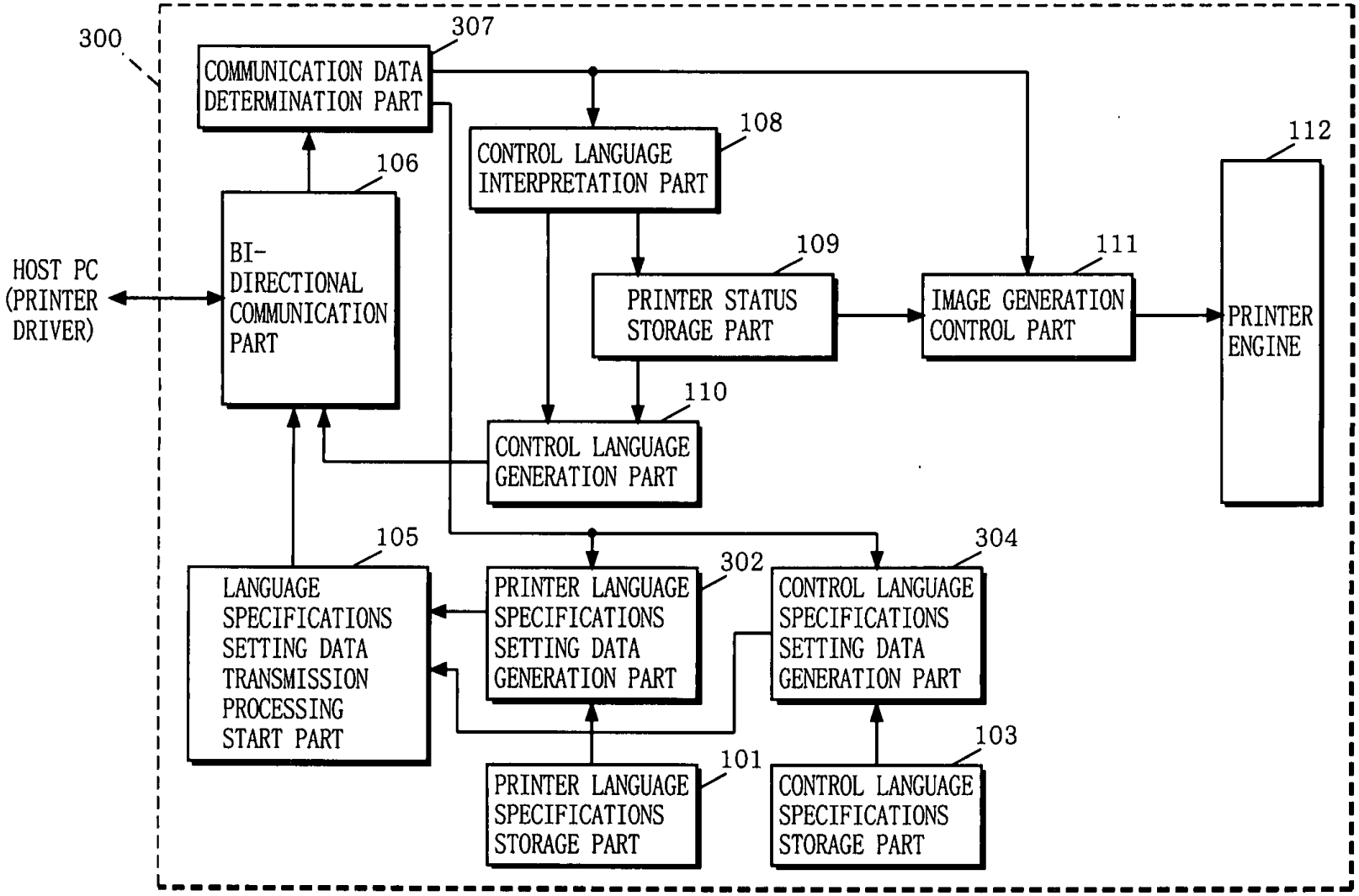

300
307
COMMUNICATION DATA DETERMINATION PART
108
CONTROL LANGUAGE INTERPRETATION PART
112
106
BI-DIRECTIONAL COMMUNICATION PART
HOST PC (PRINTER DRIVER)
109
PRINTER STATUS STORAGE PART
111
IMAGE GENERATION CONTROL PART
PRINTER ENGINE
110
CONTROL LANGUAGE GENERATION PART
105
LANGUAGE SPECIFICATIONS SETTING DATA TRANSMISSION PROCESSING START PART
302
PRINTER LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
304
CONTROL LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
101
PRINTER LANGUAGE SPECIFICATIONS STORAGE PART
103
CONTROL LANGUAGE SPECIFICATIONS STORAGE PART

FIG. 8

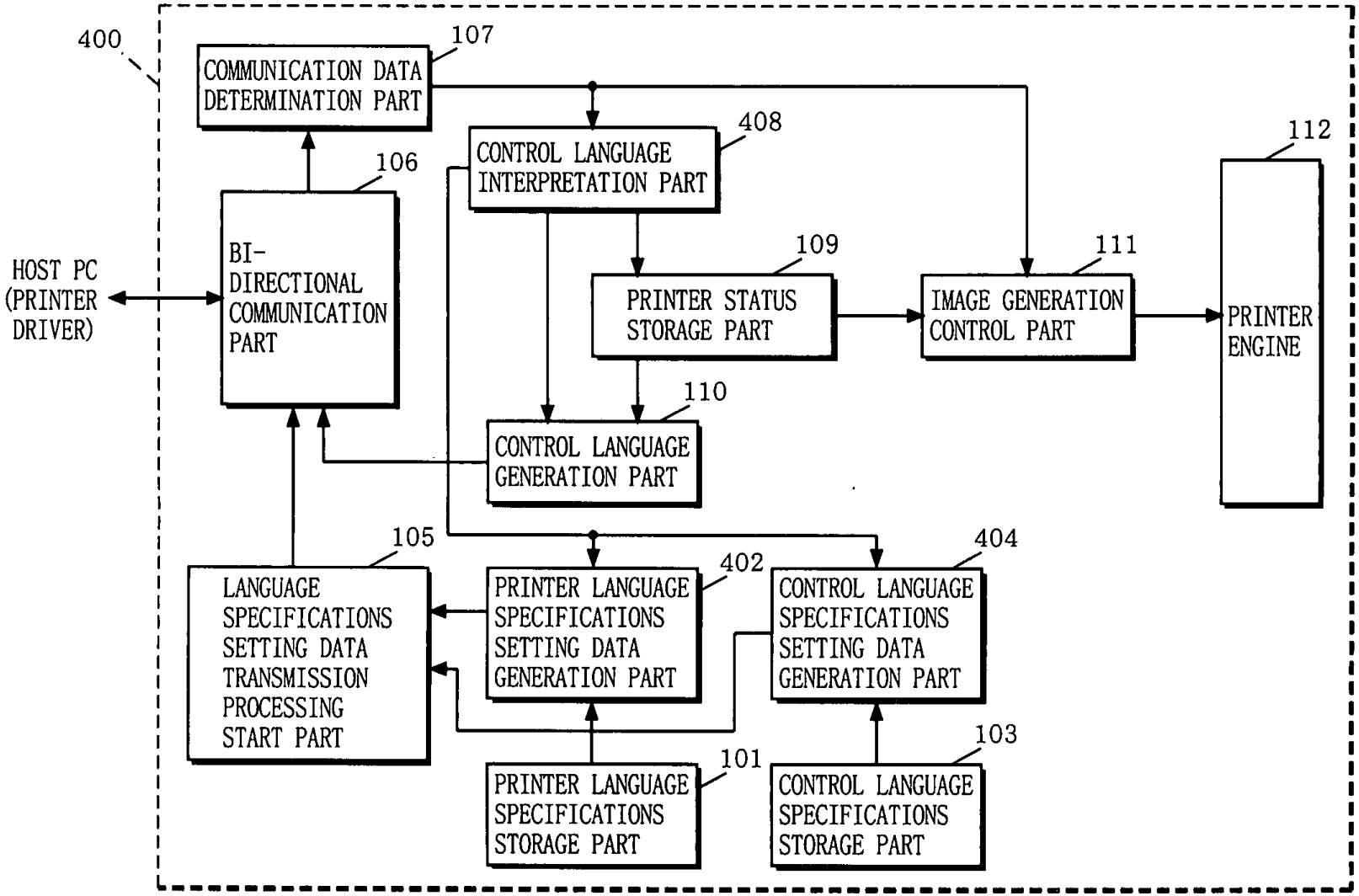

400
COMMUNICATION DATA DETERMINATION PART
107
CONTROL LANGUAGE INTERPRETATION PART
408
112
106
HOST PC (PRINTER DRIVER)
BI-DIRECTIONAL COMMUNICATION PART
109
PRINTER STATUS STORAGE PART
111
IMAGE GENERATION CONTROL PART
PRINTER ENGINE
110
CONTROL LANGUAGE GENERATION PART
105
LANGUAGE SPECIFICATIONS SETTING DATA TRANSMISSION PROCESSING START PART
PRINTER LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
402
404
CONTROL LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
103
101
PRINTER LANGUAGE SPECIFICATIONS STORAGE PART
CONTROL LANGUAGE SPECIFICATIONS STORAGE PART

FIG. 9

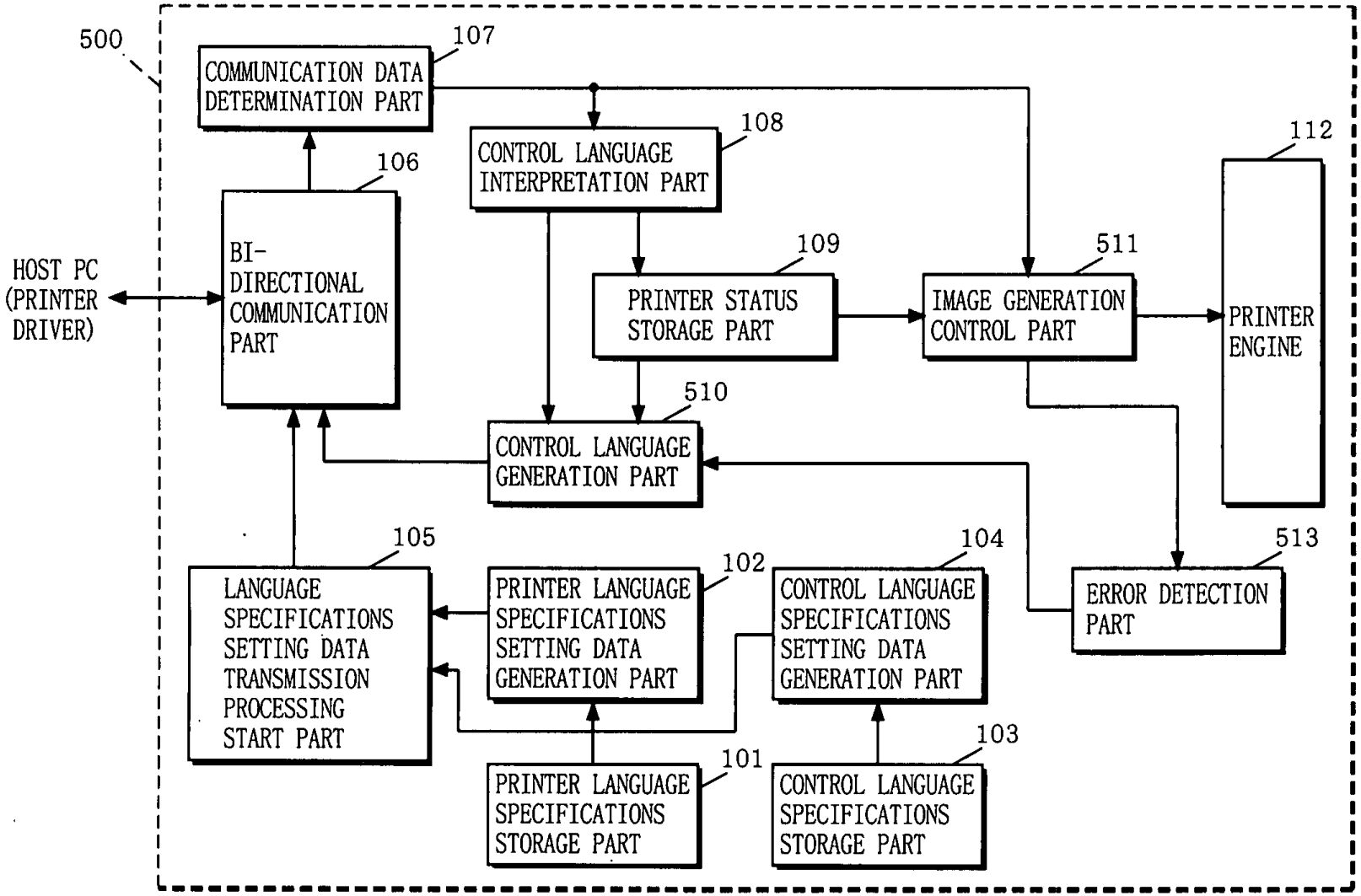

500
COMMUNICATION DATA DETERMINATION PART
107
CONTROL LANGUAGE INTERPRETATION PART
108
112
106
HOST PC (PRINTER DRIVER)
BI-DIRECTIONAL COMMUNICATION PART
109
PRINTER STATUS STORAGE PART
511
IMAGE GENERATION CONTROL PART
PRINTER ENGINE
510
CONTROL LANGUAGE GENERATION PART
105
104
513
LANGUAGE SPECIFICATIONS SETTING DATA TRANSMISSION PROCESSING START PART
PRINTER LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
102
CONTROL LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
ERROR DETECTION PART
103
101
PRINTER LANGUAGE SPECIFICATIONS STORAGE PART
CONTROL LANGUAGE SPECIFICATIONS STORAGE PART

FIG. 10

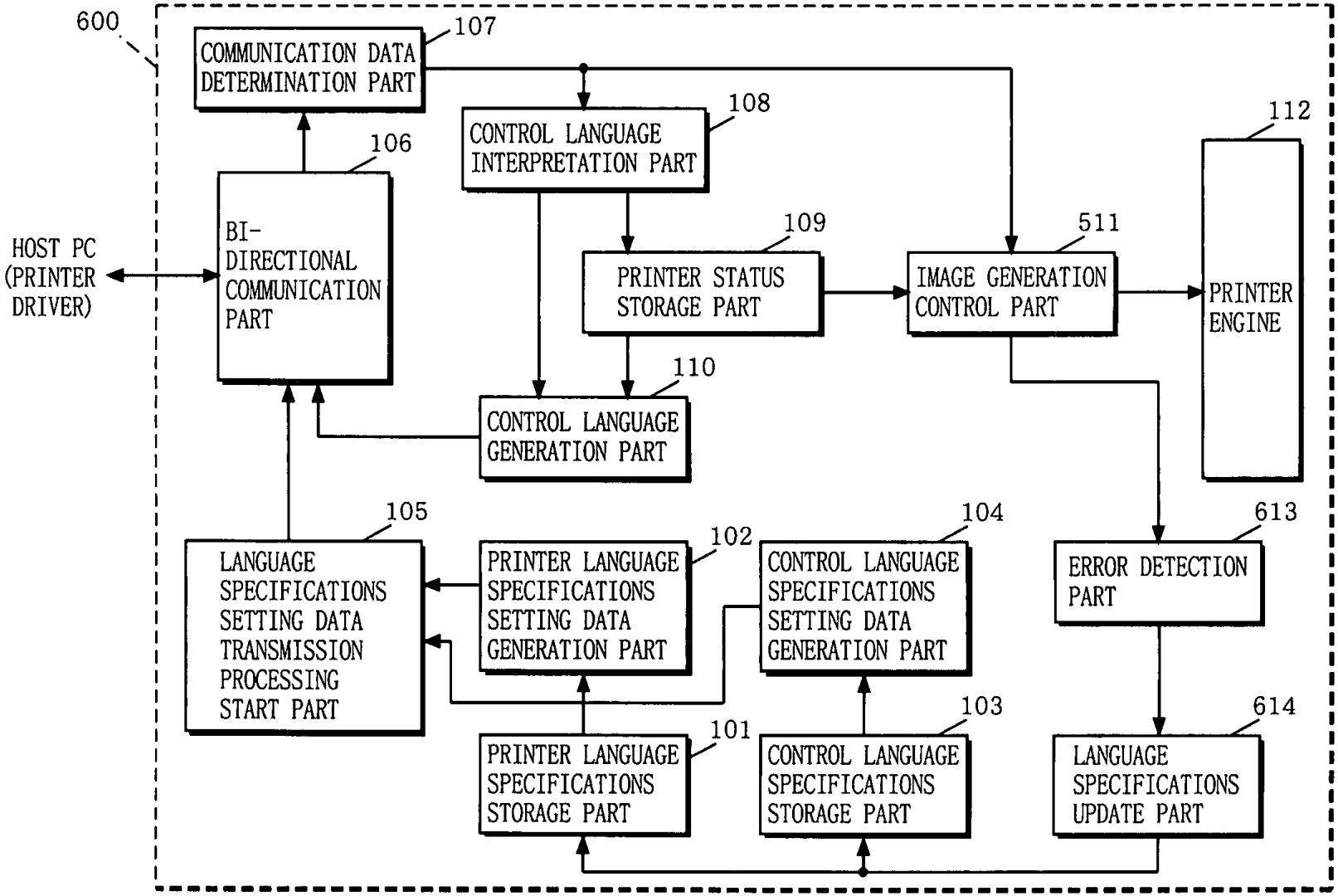

600
COMMUNICATION DATA DETERMINATION PART
107
CONTROL LANGUAGE INTERPRETATION PART
108
112
106
HOST PC (PRINTER DRIVER)
BI-DIRECTIONAL COMMUNICATION PART
109
PRINTER STATUS STORAGE PART
511
IMAGE GENERATION CONTROL PART
PRINTER ENGINE
110
CONTROL LANGUAGE GENERATION PART
105
LANGUAGE SPECIFICATIONS SETTING DATA TRANSMISSION PROCESSING START PART
PRINTER LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
102
CONTROL LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
104
613
ERROR DETECTION PART
PRINTER LANGUAGE SPECIFICATIONS STORAGE PART
101
CONTROL LANGUAGE SPECIFICATIONS STORAGE PART
103
614
LANGUAGE SPECIFICATIONS UPDATE PART

FIG. 11

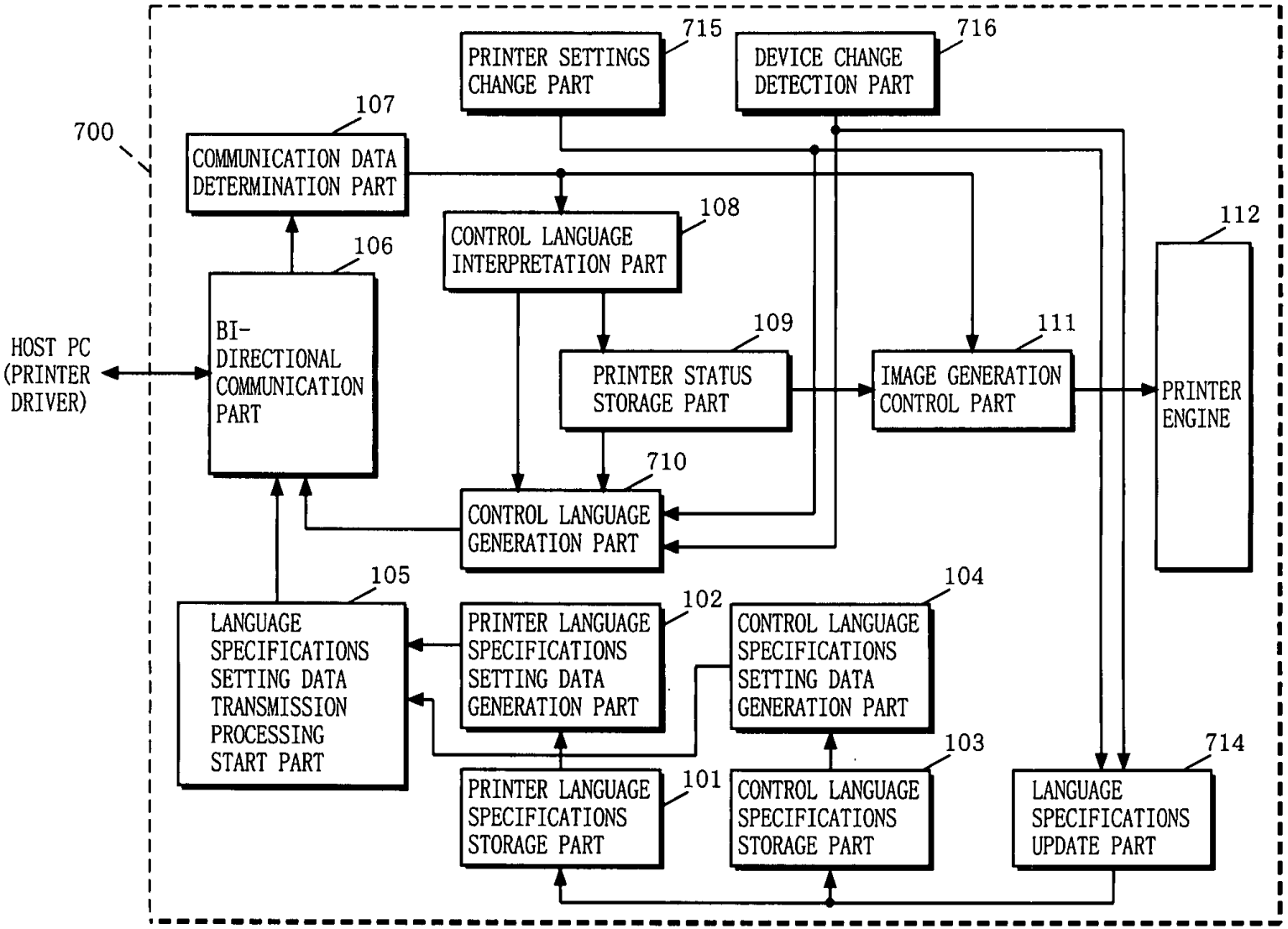

700
PRINTER SETTINGS CHANGE PART
715
DEVICE CHANGE DETECTION PART
716
107
COMMUNICATION DATA DETERMINATION PART
108
CONTROL LANGUAGE INTERPRETATION PART
112
106
HOST PC (PRINTER DRIVER)
BI-DIRECTIONAL COMMUNICATION PART
109
PRINTER STATUS STORAGE PART
111
IMAGE GENERATION CONTROL PART
PRINTER ENGINE
710
CONTROL LANGUAGE GENERATION PART
105
LANGUAGE SPECIFICATIONS SETTING DATA TRANSMISSION PROCESSING START PART
102
PRINTER LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
104
CONTROL LANGUAGE SPECIFICATIONS SETTING DATA GENERATION PART
103
714
PRINTER LANGUAGE SPECIFICATIONS STORAGE PART
101
CONTROL LANGUAGE SPECIFICATIONS STORAGE PART
LANGUAGE SPECIFICATIONS UPDATE PART

FIG. 12

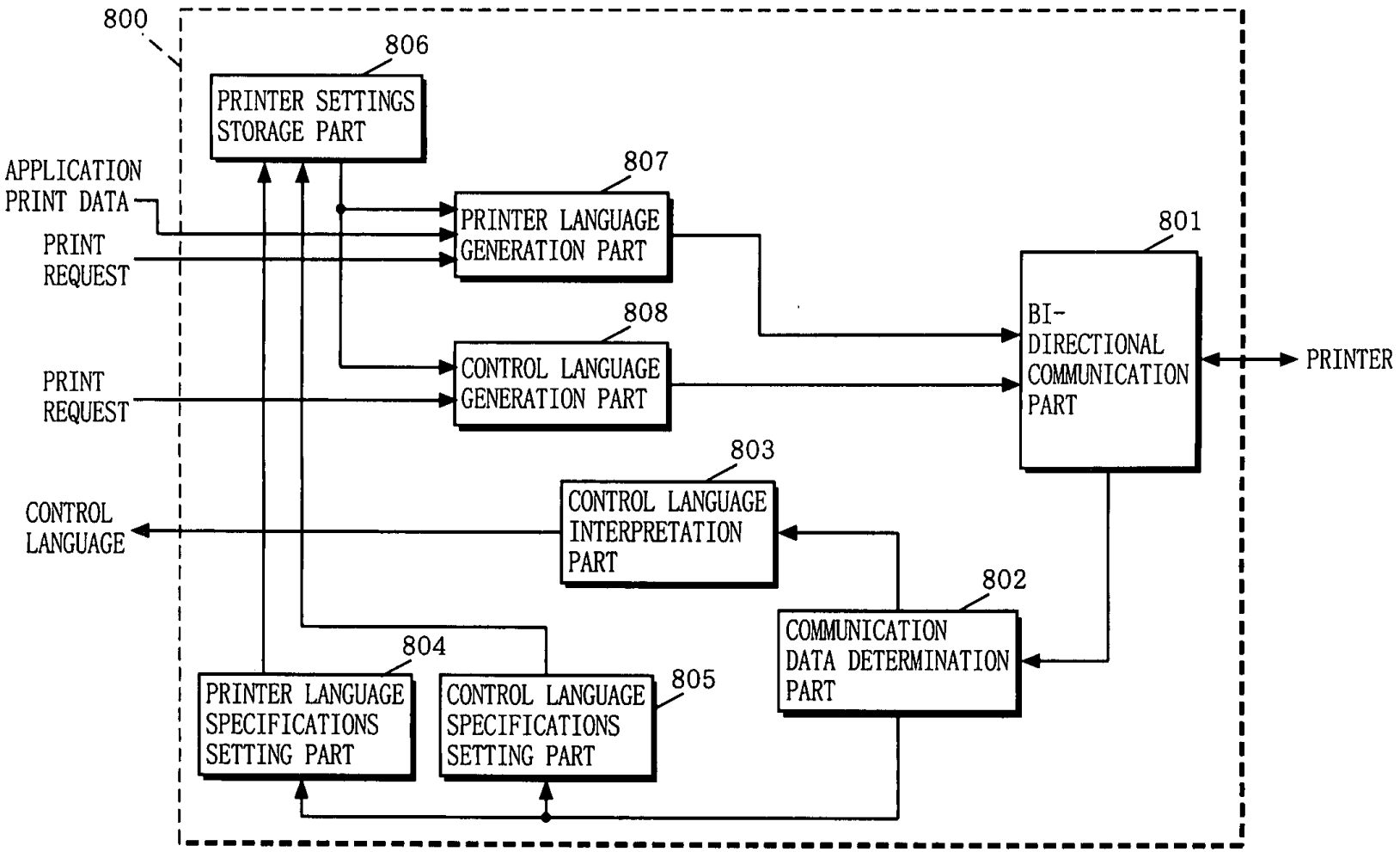

800
806
PRINTER SETTINGS STORAGE PART
APPLICATION PRINT DATA
PRINT REQUEST
807
PRINTER LANGUAGE GENERATION PART
801
BI-DIRECTIONAL COMMUNICATION PART
PRINTER
PRINT REQUEST
808
CONTROL LANGUAGE GENERATION PART
803
CONTROL LANGUAGE
CONTROL LANGUAGE INTERPRETATION PART
802
COMMUNICATION DATA DETERMINATION PART
804
PRINTER LANGUAGE SPECIFICATIONS SETTING PART
805
CONTROL LANGUAGE SPECIFICATIONS SETTING PART

FIG. 13

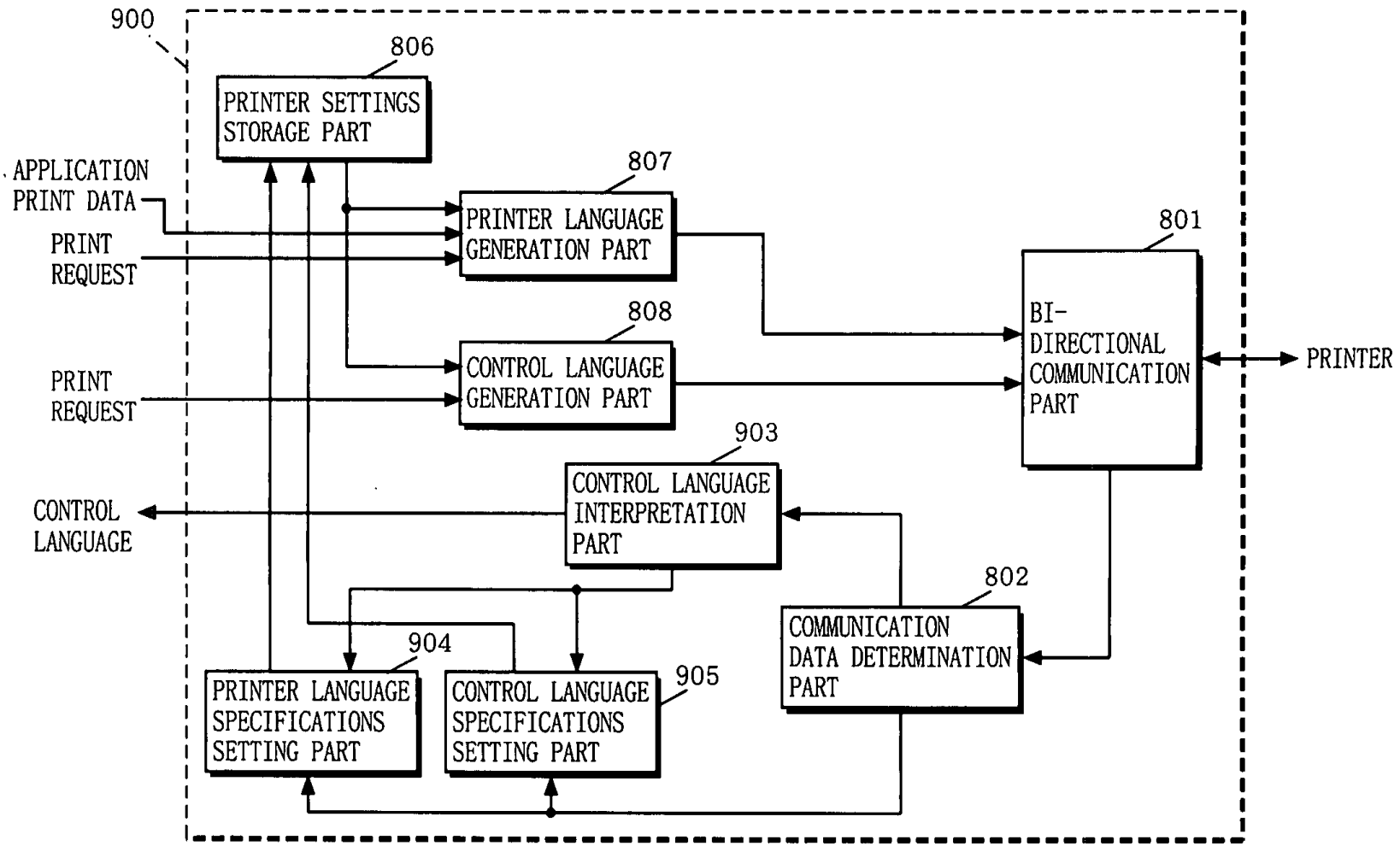

900
806
PRINTER SETTINGS STORAGE PART
APPLICATION PRINT DATA
PRINT REQUEST
807
PRINTER LANGUAGE GENERATION PART
801
BI-DIRECTIONAL COMMUNICATION PART
PRINTER
PRINT REQUEST
808
CONTROL LANGUAGE GENERATION PART
903
CONTROL LANGUAGE INTERPRETATION PART
CONTROL LANGUAGE
802
COMMUNICATION DATA DETERMINATION PART
904
905
PRINTER LANGUAGE SPECIFICATIONS SETTING PART
CONTROL LANGUAGE SPECIFICATIONS SETTING PART

FIG. 14

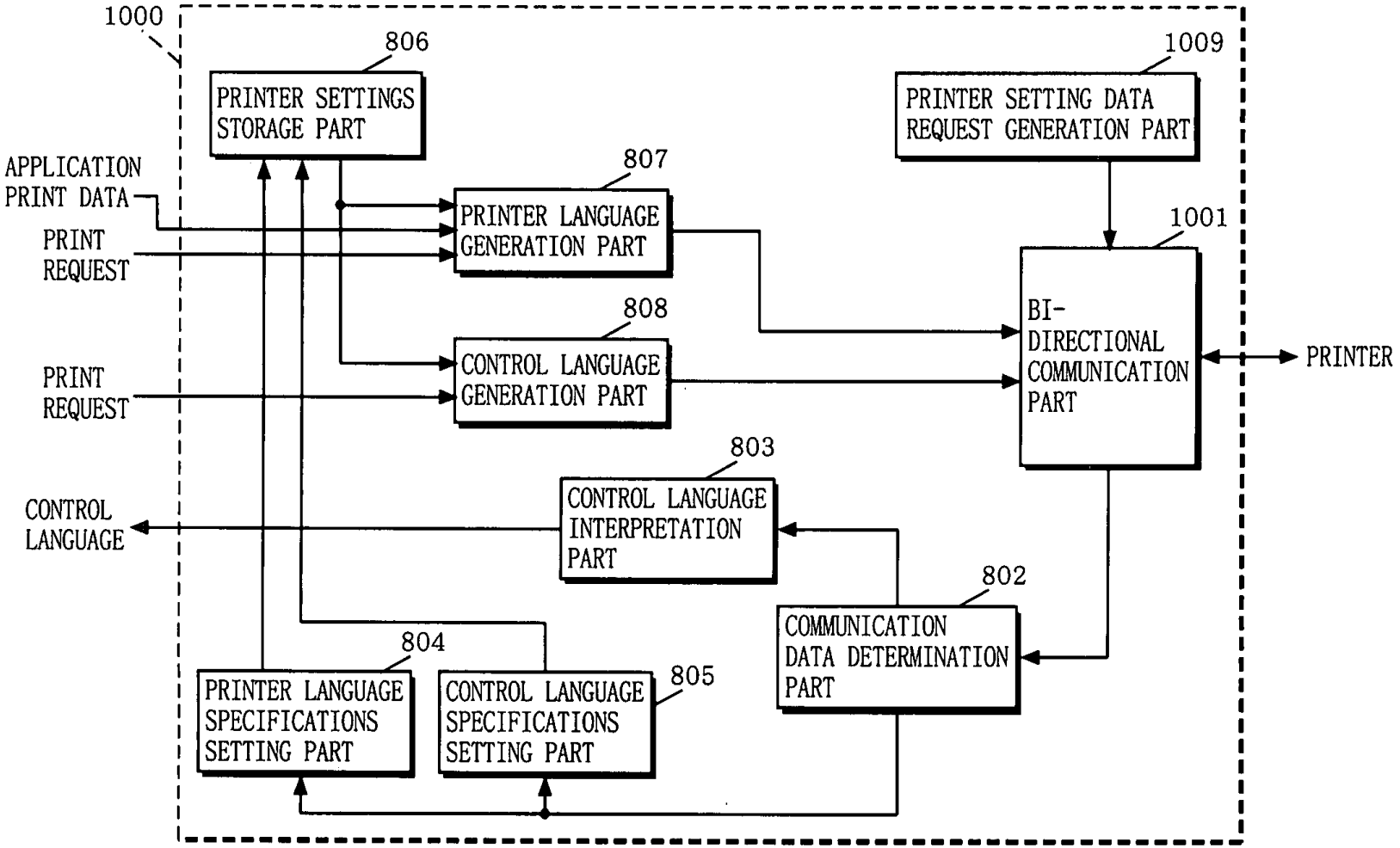

1000
806
PRINTER SETTINGS STORAGE PART
1009
PRINTER SETTING DATA REQUEST GENERATION PART
APPLICATION PRINT DATA
PRINT REQUEST
807
PRINTER LANGUAGE GENERATION PART
1001
BI-DIRECTIONAL COMMUNICATION PART
PRINTER
PRINT REQUEST
808
CONTROL LANGUAGE GENERATION PART
803
CONTROL LANGUAGE
CONTROL LANGUAGE INTERPRETATION PART
802
COMMUNICATION DATA DETERMINATION PART
804
PRINTER LANGUAGE SPECIFICATIONS SETTING PART
805
CONTROL LANGUAGE SPECIFICATIONS SETTING PART

FIG. 15

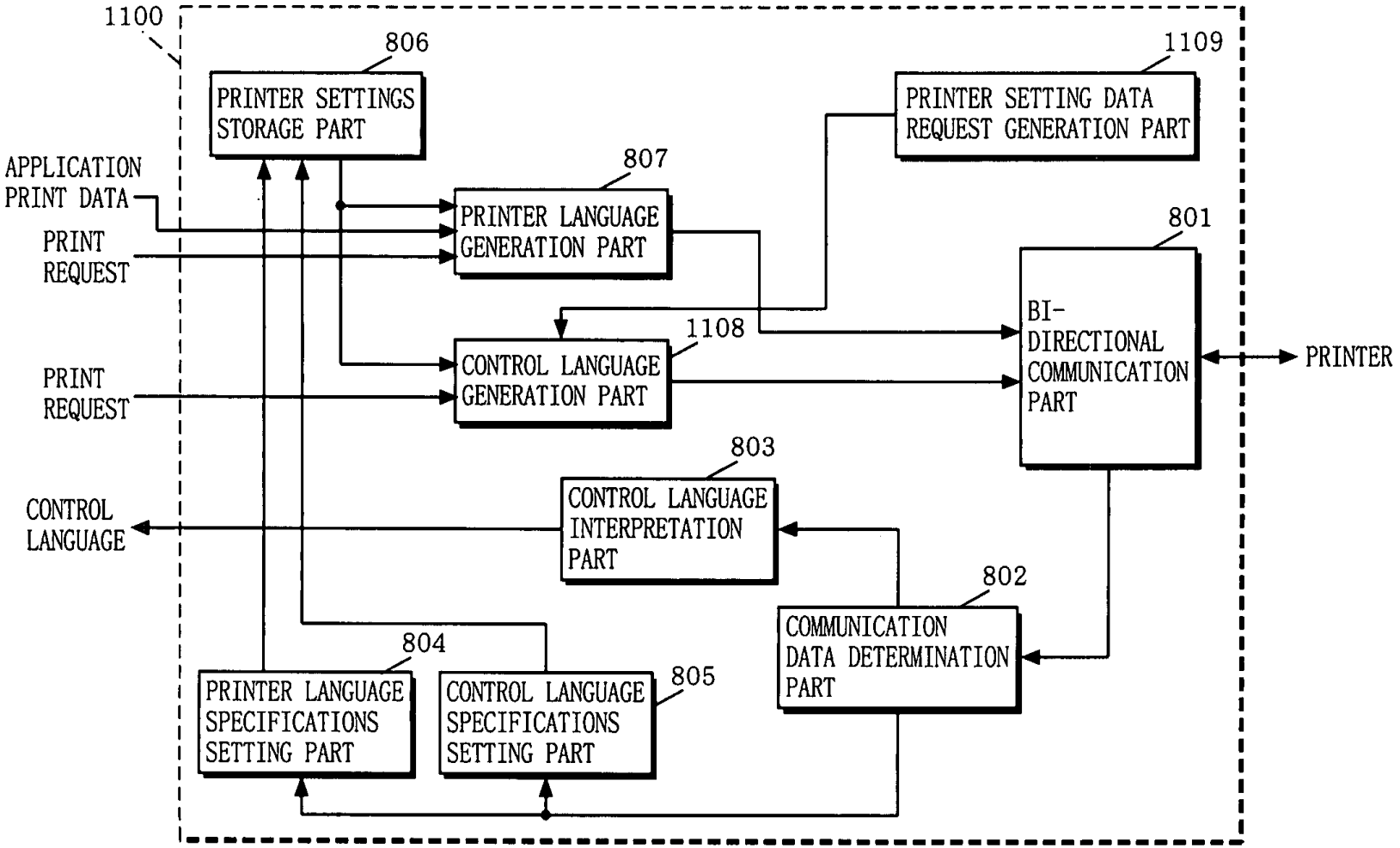

1100
806
PRINTER SETTINGS STORAGE PART
1109
PRINTER SETTING DATA REQUEST GENERATION PART
APPLICATION PRINT DATA
807
PRINTER LANGUAGE GENERATION PART
PRINT REQUEST
801
BI-DIRECTIONAL COMMUNICATION PART
PRINTER
1108
CONTROL LANGUAGE GENERATION PART
PRINT REQUEST
803
CONTROL LANGUAGE INTERPRETATION PART
CONTROL LANGUAGE
802
COMMUNICATION DATA DETERMINATION PART
804
805
PRINTER LANGUAGE SPECIFICATIONS SETTING PART
CONTROL LANGUAGE SPECIFICATIONS SETTING PART

FIG. 16

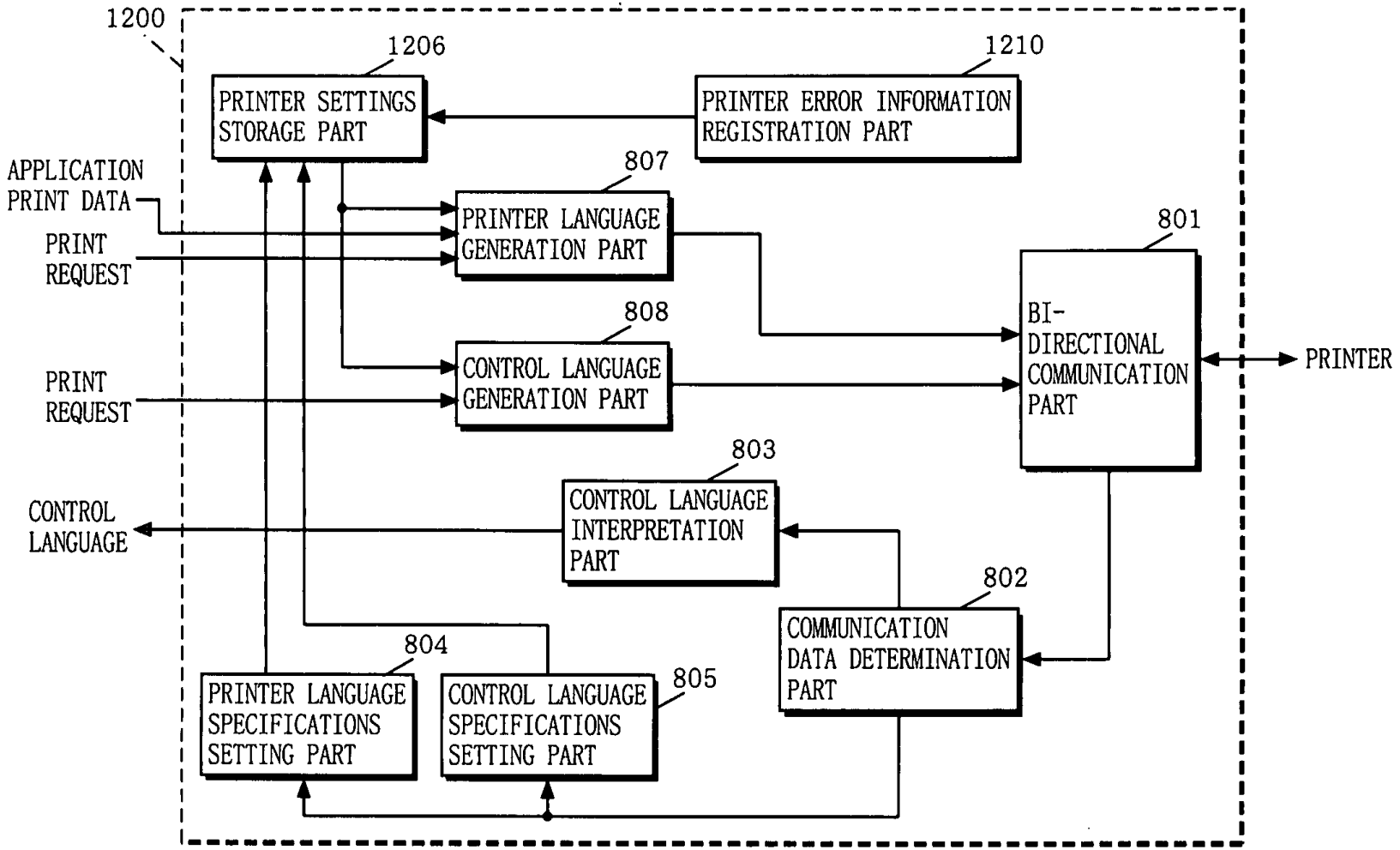

1200
1206
PRINTER SETTINGS STORAGE PART
1210
PRINTER ERROR INFORMATION REGISTRATION PART
APPLICATION PRINT DATA
PRINT REQUEST
807
PRINTER LANGUAGE GENERATION PART
801
BI-DIRECTIONAL COMMUNICATION PART
PRINTER
PRINT REQUEST
808
CONTROL LANGUAGE GENERATION PART
803
CONTROL LANGUAGE
CONTROL LANGUAGE INTERPRETATION PART
802
COMMUNICATION DATA DETERMINATION PART
804
PRINTER LANGUAGE SPECIFICATIONS SETTING PART
805
CONTROL LANGUAGE SPECIFICATIONS SETTING PART

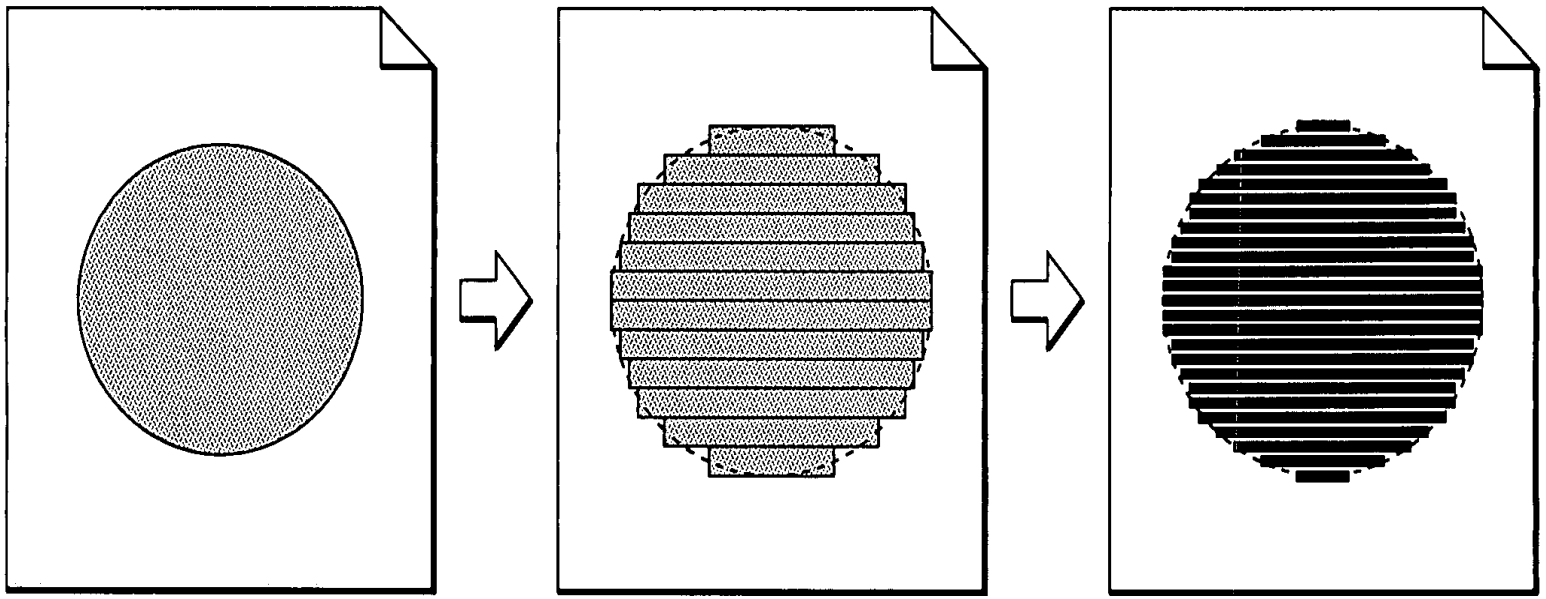
FIG. 17

PLOT OBJECT	COMMAND	LINK INFORMATION	ERROR INFORMATION
CIRCLE	CIRCLE, CENTER X COORDINATE, CENTER Y COORDINATE, RADIUS ;	RECTANGLE	×
RECTANGLE	RECTANGLE, UPPER-LEFT X COORDINATE, UPPER-LEFT Y COORDINATE, LOWER-RIGHT X COORDINATE, LOWER-RIGHT Y COORDINATE ;	LINE	○
LINE	LINE, STARTPOINT X COORDINATE, STARTPOINT Y COORDINATE, ENDPOINT X COORDINATE, ENDPOINT Y COORDINATE ;	NONE	○
ELLIPSE	ELLIPSE, STARTPOINT X COORDINATE, STARTPOINT Y COORDINATE, ENDPOINT X COORDINATE, ENDPOINT Y COORDINATE ;	RECTANGLE	○
⋮	⋮	⋮	⋮

FIG. 18

CONTROL ELEMENT	COMMAND	LINK INFORMATION	ERROR INFORMATION
INPUT TRAY	INPUTTRAY, TRAY NUMBER ;	OUTPUT TRAY	○
INTERNALLY-PROVIDED MEMORY CAPACITY	MEMORY ;	NONE	○
PAPER SELECTION	PAPER, PAPER SIZE ;	PRINTING QUALITY	×
⋮	⋮	⋮	⋮

FIG. 19



(a) (b) (c)

FIG. 20

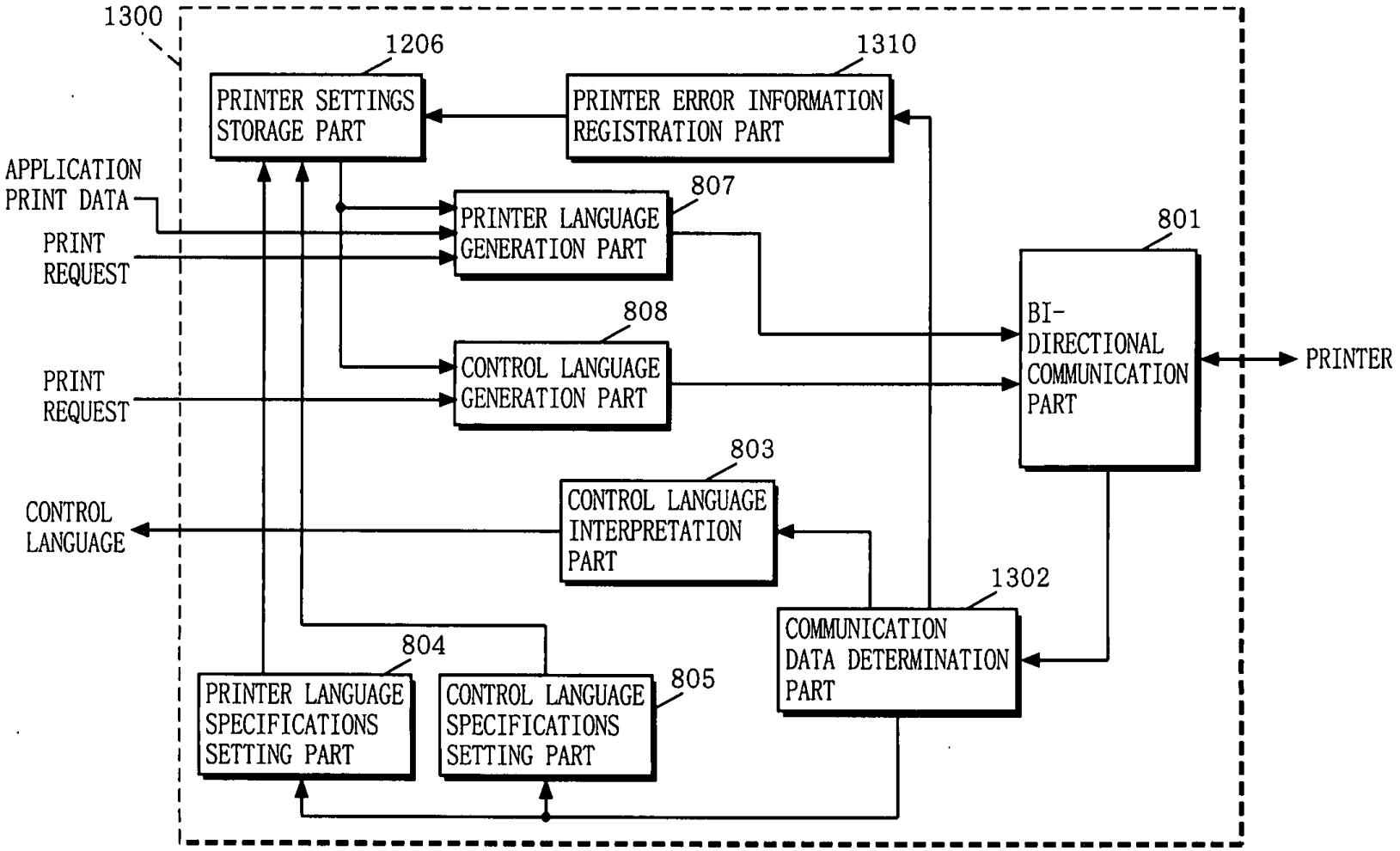

1300
1206
PRINTER SETTINGS STORAGE PART
1310
PRINTER ERROR INFORMATION REGISTRATION PART
APPLICATION PRINT DATA
PRINT REQUEST
807
PRINTER LANGUAGE GENERATION PART
801
BI-DIRECTIONAL COMMUNICATION PART
PRINTER
PRINT REQUEST
808
CONTROL LANGUAGE GENERATION PART
803
CONTROL LANGUAGE
CONTROL LANGUAGE INTERPRETATION PART
1302
COMMUNICATION DATA DETERMINATION PART
804
PRINTER LANGUAGE SPECIFICATIONS SETTING PART
805
CONTROL LANGUAGE SPECIFICATIONS SETTING PART

FIG. 21

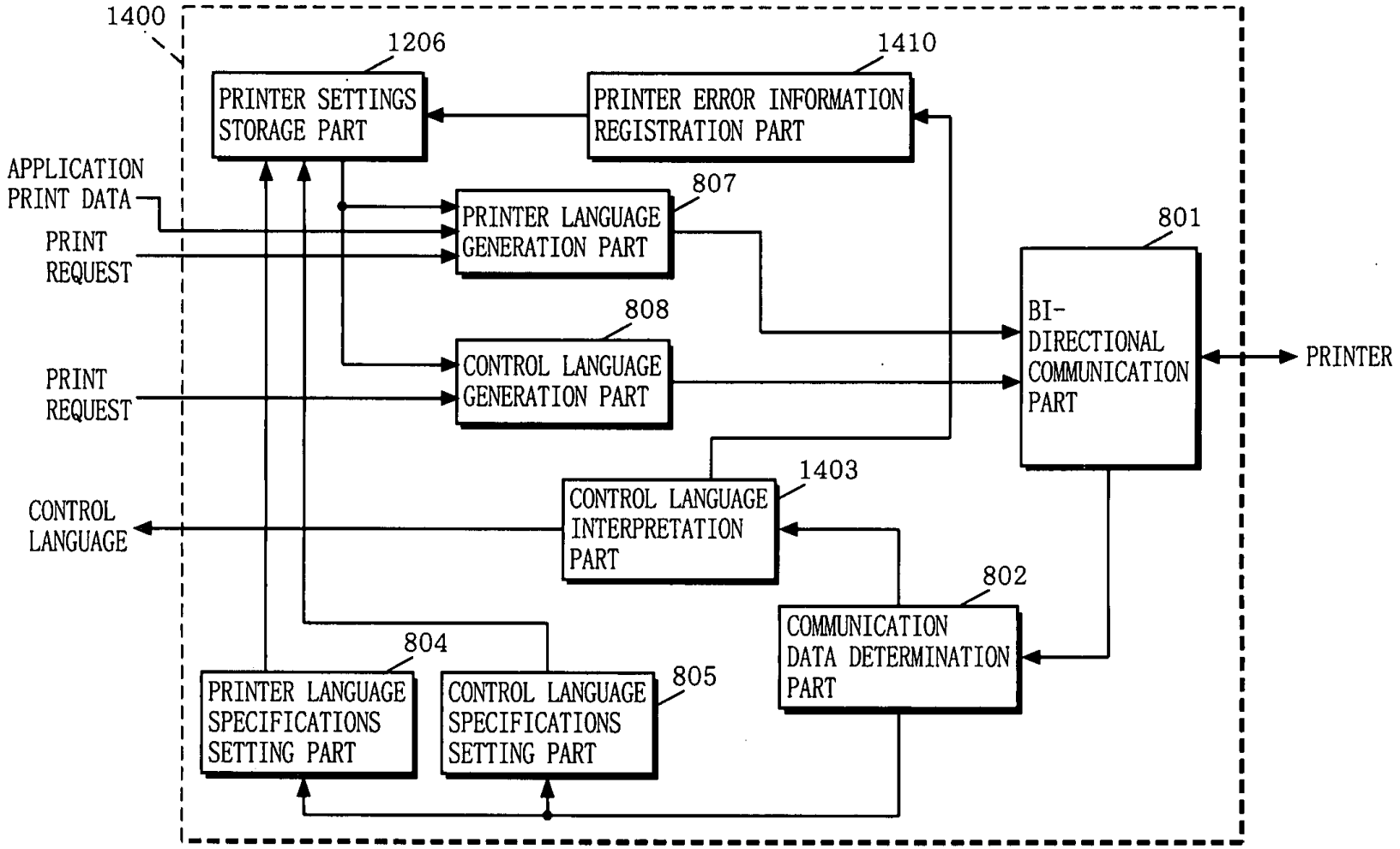

1400
1206
PRINTER SETTINGS STORAGE PART
1410
PRINTER ERROR INFORMATION REGISTRATION PART
APPLICATION PRINT DATA
PRINT REQUEST
807
PRINTER LANGUAGE GENERATION PART
801
BI-DIRECTIONAL COMMUNICATION PART
PRINTER
808
PRINT REQUEST
CONTROL LANGUAGE GENERATION PART
1403
CONTROL LANGUAGE
CONTROL LANGUAGE INTERPRETATION PART
802
COMMUNICATION DATA DETERMINATION PART
804
PRINTER LANGUAGE SPECIFICATIONS SETTING PART
805
CONTROL LANGUAGE SPECIFICATIONS SETTING PART

FIG. 22

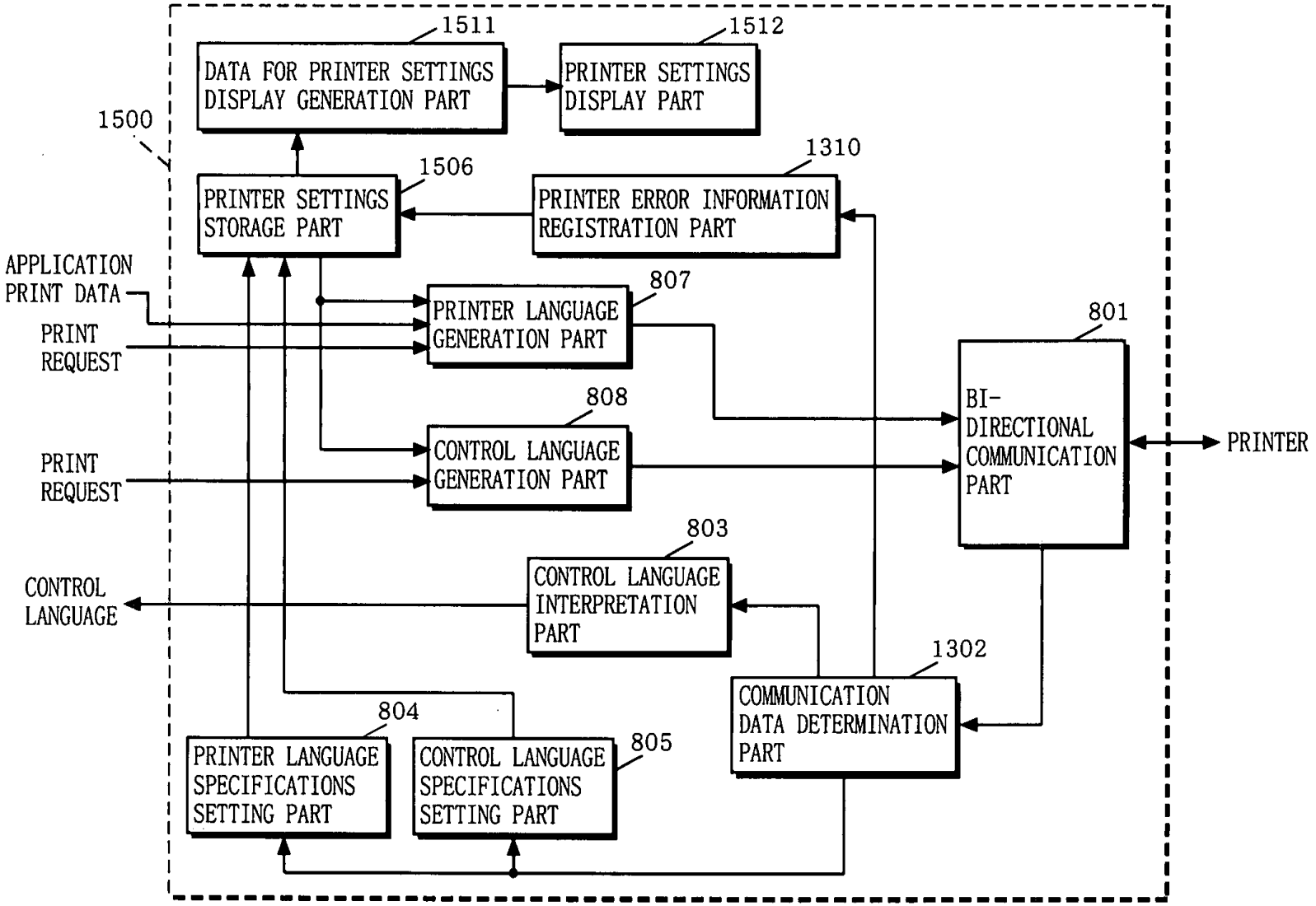
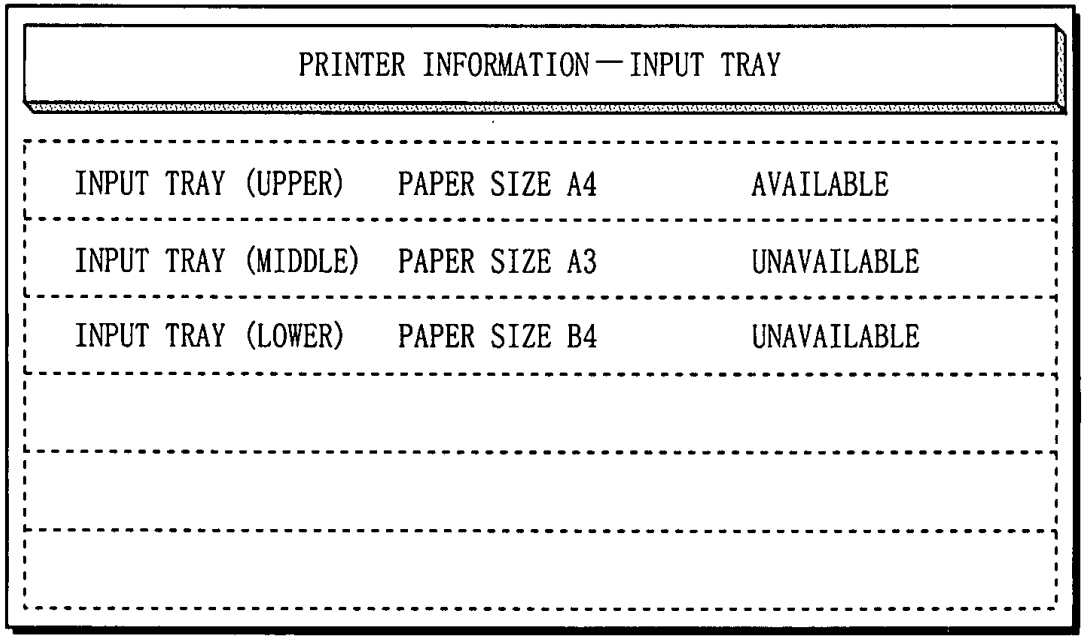

1500
1511
DATA FOR PRINTER SETTINGS DISPLAY GENERATION PART
1512
PRINTER SETTINGS DISPLAY PART
1506
PRINTER SETTINGS STORAGE PART
1310
PRINTER ERROR INFORMATION REGISTRATION PART
APPLICATION PRINT DATA
PRINT REQUEST
807
PRINTER LANGUAGE GENERATION PART
801
BI-DIRECTIONAL COMMUNICATION PART
PRINTER
PRINT REQUEST
808
CONTROL LANGUAGE GENERATION PART
803
CONTROL LANGUAGE
CONTROL LANGUAGE INTERPRETATION PART
1302
COMMUNICATION DATA DETERMINATION PART
804
PRINTER LANGUAGE SPECIFICATIONS SETTING PART
805
CONTROL LANGUAGE SPECIFICATIONS SETTING PART

FIG. 23


PRINTER INFORMATION — INPUT TRAY
INPUT TRAY (UPPER) PAPER SIZE A4 AVAILABLE
INPUT TRAY (MIDDLE) PAPER SIZE A3 UNAVAILABLE
INPUT TRAY (LOWER) PAPER SIZE B4 UNAVAILABLE

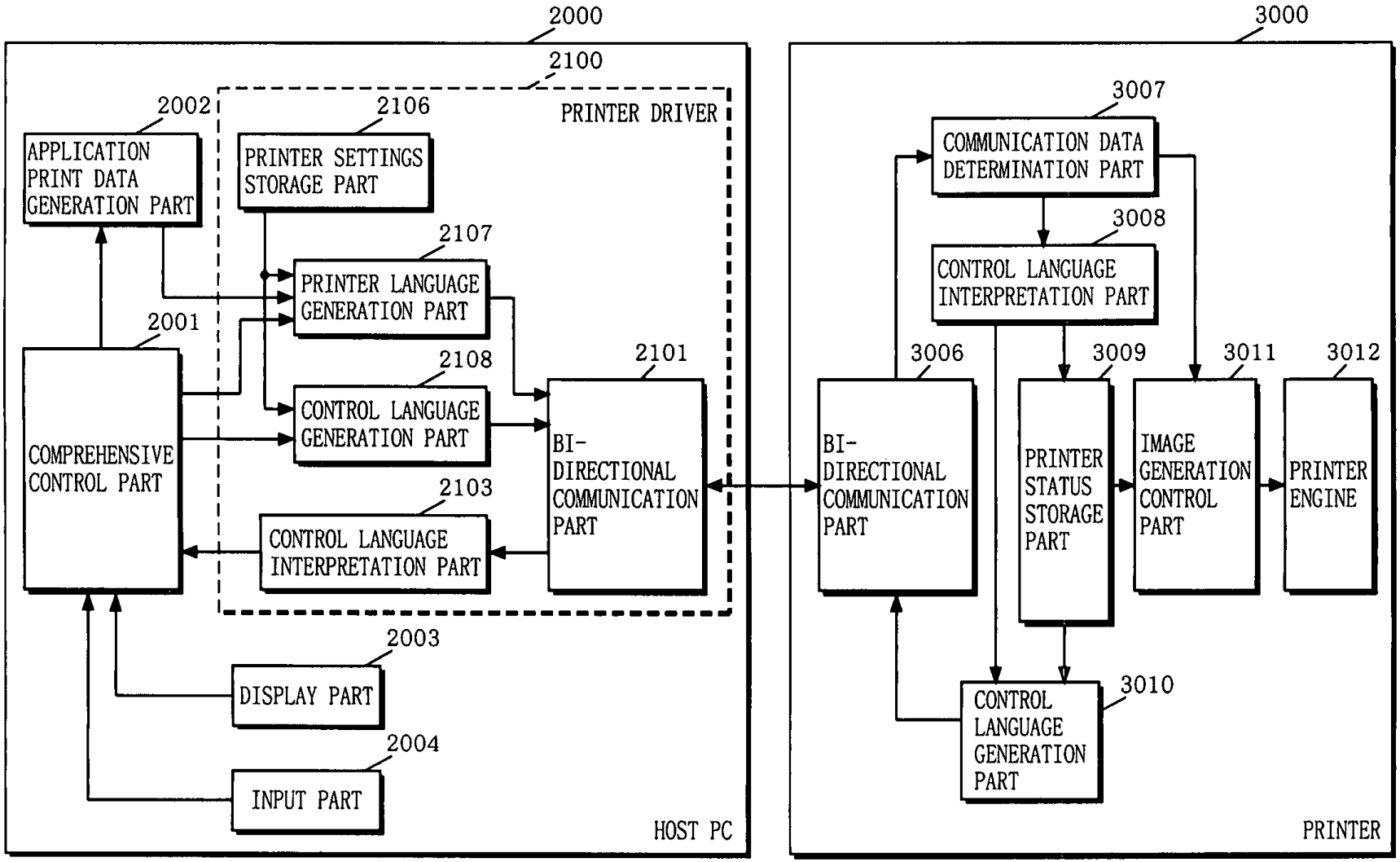



FIG. 24 PRIOR ART